IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Appelquist et al.
Serial No. : 09/623,714
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Art Unit : 1723
Examiner : Charles E. Cooley

Title : A SUPPORT DEVICE FOR SUPPORTING A SPINDLE AND A CENTRIFUGAL SEPARATOR HAVING SUCH A SUPPORT DEVICE (AS AMENDED)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF STEFAN SZEPESSY UNDER 37 C.F.R. 1.132

1. I, Stefan Szepessy, was educated at Chalmers University of Technology, School of Mechanical Engineering, MSc 1986, PhD 1991. I have been employed by Alfa Laval AB, the assignee of the present application, for a total of 11 years, nine of which as Research Scientist and the two last years as a Research Manager.

2. In preparing this declaration, I have reviewed the office Action mailed April 14, 2003, the cited references (namely, WO97/13583; US 2,487,343; GB 2,143,299; and US 2,230,069), the patent application and the pending claims (1-20). It is my opinion that the claimed arrangement of combining a rubber material and a spring element as a support member for a spindle in a centrifugal separator dampening rotordynamical oscillations of the spindle and other rotating and non-rotating parts connected to and oscillating with the spindle (which must not be confused with the support members for the support of the centrifugal separator to the mounting foundation) would not have been obvious at the time the claimed invention was made to one of ordinary skill in the art, in view of the references cited.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

August 18, 2003
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3. The combinations of a rubber material and a helical spring element disclosed in two of the cited references (GB 2,143,299 and US 2,230,069) to dampen the vibration movement of the spring would not have been obvious to use as the support members in a centrifugal separator (WO97/13583 and US 2,487,343) for the support of the rotordynamically oscillating system of a centrifugal separator in a support structure. Compared to the applications for which those devices are used in the cited art, the often very heavy rotational systems in centrifugal separators operate at extremely high rotational speeds. When such a rotational system starts to oscillate, which might occur when passing a critical rotational speed or when there is an imbalance in the rotating system due to uneven mass distribution, measures have to be taken to prevent the oscillations from exceeding dangerous levels. The radial amplitude has to be sufficiently low so as to avoid contact between rotating parts and stationary non-rotating parts, and at the same time, the high amount of energy being fed into the rotating system has to be absorbed. In most cases this means that the supporting members have to be very stiff and at the same time be able to dampen all the energy. The relatively thicker spring elements used with a centrifugal separator permit less rubber material to reside in the smaller space between adjacent rounds of the spring element. The embedding of the spring element itself in the rubber material further reduces the amount of rubber material available to absorb the high energy associated with the radial movement of the spindle.

4. For these reasons and due to the frequency and degree of the spindle movement, it would not have been expected that a rubber material could absorb the energy without rapid degradation and without rapidly becoming harder, more brittle and less elastic due to at least fatigue, stretching or excessive heating. The claimed combination would not have been expected to dampen the radial movement of the centrifugal separator spindle for any reasonable length of time without damage to the rubber material due to the expected high forces acting on the rubber material. The actual results achieved by the invention were therefore both surprising and unexpected.

5. It is this particular combination of the claimed support device and a centrifugal separator that is useful. In view of the above considerations, it is my opinion that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to use a

rubber material provided at least in the spaces of the springs of a support device designed for a centrifugal separator.

6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-identified application or any patents issued thereon.

Dated: Stockholm, Sweden
August ___, 2003

Stefan Szepessy